

SOUTH AMERICAN LOBELIOIDEAE NEW TO SCIENCE

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The *Lobelioideae*—now usually regarded as a subfamily of the *Campanulaceae*, but formerly at least often treated as a distinct family, *Lobeliaceae*—comprise a natural taxon not easily confused with any other. As in many another “natural” family and subfamily, however, intra-familial taxa are often difficult to separate. According to the most recent revision of the *Lobelioideae*, that of the late F. E. Wimmer (*Pflanzenreich* **IV**. 276b, parts 1 and 2 [Hefte 106, 107] 1943, 1953), the group includes 29 genera and 1157 species well distributed throughout the world. About 70 percent of the species belong to three large genera: *Lobelia* (cosmopolitan, 383 species), *Centropogon* (chiefly South American, 226 species), *Siphocampylus* (Tropical American, 207 species). About 93 percent of all the species belong to one or another of ten genera; the next seven are, in order: *Burmeistera* (chiefly South American, 77); *Cyanea* (Hawaii, 60); *Pratia* (tropical, 34); *Clermontia* (Hawaii, 28); *Laurentia* (cosmopolitan, 25); *Lysipomia* (Andean, 19); *Monopsis* (African, 18). Looked at from the other end, there are 7 monotypic genera, and 9 genera with 2-8 species each. The unifying features of the *Lobelioideae* are in the corolla and androecium, which are so well known as to need no description here, and so nearly uniform throughout the subfamily that they provide in themselves scarcely any dependable taxonomic distinctions at the generic level. Most generic distinctions have been made on the basis of the fruit; e.g., whether a capsule or berry, whether (if a capsule) loculicidal or circumscissile, whether 1- or 2- locular, etc. Most of the smaller genera occupy limited geographical ranges and are also morphologically well set apart; e.g. *Dialypetalum* in Madagascar; *Phyllocharis* in New Guinea; *Apetahia* in Polynesia; *Legenere* and *Downingia* in Chile and in the Californian region; *Lysipomia* in Andean South America.

There are among the American *Lobelioideae* two classes of genera that do not fit neatly and logically into taxonomic systems. Such genera are either large and diverse but not readily divisible into subordinate taxa (e.g. *Lobelia*, *Siphocampylus*, *Centropogon*), or small in number of species but either too close to *Lobelia* or evidently genera of convenience only. *Diastatea*, for example, is a group of 5 or 6 species, chiefly Mexican. The plants are small annuals, distinguished by having the ovary superior or nearly so, the corolla not cleft to the base but distended by the expanding ovary. The genus seems to be a natural evolutionary unit, but it is not very different from *Lobelia*. Most (but not all!) Mexican species of *Lobelia* have an inferior ovary (as usual in the subfamily); most (but not all!) have the corolla cleft to the base; in the appropriately named *Lobelia diastateoides* the ovary is superior and distends the corolla, but the corolla-tube is cleft half its length, and the plant is perennial. The recognition of *Diastatea* as a genus, in other words,

depends upon a combination of features, none of which in itself is sufficient. Another small—and also chiefly Mexican—genus, *Heterotoma*, is apparently not a “natural” group like *Diastatea*, but a genus of convenience, based on the single feature of the gibbous or spurred base of the flower; this is discussed further on in this paper.

The species that are described below are based on specimens sent to me for identification from the Royal Botanic Gardens, Kew; from the United States National Herbarium; and from the University of California, Berkeley. Explorations in recent years have brought to light a number of novelties from the Eastern Cordillera of Colombia and from the mountains of southern Ecuador and northern Peru. It is increasingly evident that in the *Lobelioideae*, as in other plant-families, interpretation of the Andean floras depends upon an understanding of the possibilities for local endemism and the development of microspecies, and at the same time an understanding of the changes that may take place in species that are widely distributed along the Andes. Suffice it to say here that almost every mountain in the Andes seems to have different species on it, and no one except Wimmer has ever known the large genera well enough to be able to distinguish confidently between what is new and what is merely a variant of a species already known. The most difficult groups by far are *Burmeistera*, which is developed chiefly in Colombia and Ecuador, and the two largest groups of *Centropogon*, namely those species with branched hairs, and those with cornute anthers, respectively. Each of these latter groups is represented by numerous species from Bolivia to Central America; many are known from the types only, and the differences between them are often subjective. It is worth emphasizing, therefore, that although recent monographs by a competent specialist have treated the South American *Lobelioideae* in great detail, a host of new and puzzling things turn up in every new collection from the Andes, and it is apparent that there is still a lifetime of work for someone interested in the study of these bizarre and beautiful plants. Until we know more about the so-called species that have already been described, the limits of their variation and the differences between them, descriptions of individually aberrant specimens would seem to have little value. In the following paragraphs, therefore, I have limited myself to the description of a few extraordinary new taxa whose real relationships are in doubt.

Burmeistera pteridioides McVaugh, sp. nov., herbacea, minute puberula, foliis angustis, pinnatifidis, lobulis sublinearibus; hypanthium tam fere latum quam longum, basi rotundatum; calycis lobi erecti usque patentes, hypanthio breviores; flores solitari-axillares, 3 cm. longi, corollis ut in subsect. *Genuinae*. Fig. 1,A.

A weak herb (“straggling”), up to 1 m high, nearly glabrous, the leaves minutely puberulent beneath especially on the veins; leaves pinnatifid, the blades narrow in outline, 7-10 cm long, 1.5-3 cm wide, with 10-12 linear or tapering, entire, obtuse lobes on each side of the midvein; lobes 1.5 cm long or less, 1.5-2.5 mm wide at base, almost at right-angles to the central rachis (which is 2-3 mm wide), or arcuate-ascending; upper and lower lateral lobes shorter than the middle ones, the terminal

one linear, 1-1.5 mm wide, 2-3 cm long; petioles 2 mm long; flowers axillary to the upper leaves, the stout ebracteate pedicels up to 8-10 cm long in fruit; flowers 3 cm long; corolla "green, somewhat darker and purplish on the outside" (Grubb *et al.*), its tube 10 mm long, abruptly contracted above the base to an isthmus 2 mm in diam, thence enlarged to the mouth; lobes all strongly deflexed-falcate, the dorsal pair 12 mm long, 3 mm wide, the lateral ones 7 mm long, the ventral one 5 mm; filament-tube 22 mm long, pubescent; anther-tube 7 mm long, 2.5 mm in diam, flaring at the distal end, bearing a few yellow hairs near the base, and a few long hairs on the margins of the lower (ventral) anthers; hypanthium rounded at base, 4 mm high, 3 mm in diam; calyx-lobes bluntly triangular, 3 mm long, 2 mm wide at base, blunt-tipped, with 1-2 prominent teeth on each side; fruit inflated, apparently oblate, "bright pink with white pulp" when ripe, about 1.2 cm high, 1.7 cm in diam; seeds brown, compressed, elongated, unilaterally margined, 1.2 mm long.

COLOMBIA: BOYACA: Sierra Nevada de Cocuy, in cloud forest by path from Báchira to Borota, on ground and on a fallen tree, elev ca 2250 m, 21 Aug 1957, *P. J. Grubb et al.* 652 (K, holotype).

Little is known of the biology of the Andean species of *Burmeistera*, as most of the species have been described by authors who have never been in the American tropics where the plants grow. Several species are known to have flowers and fruit much like those of *B. pteridioides*, and in fact in this group specific differentiation has been accomplished chiefly on the basis of leaf-characters and those of the calyx-lobes. I know of no instance in which forms with pinnatifid leaves occur in species having normally dentate leaves, so I venture to describe as a new species this plant from a previously little-explored area.

Centropogon varius McVaugh, sp. nov., scandens, sparse pilis arbusculiformibus vestita; hypanthii tubus supra ovarium 2-3 mm productus, calycis lobis 3 dorsalibus in labium coalitis; antherarum 2 inferiores apice cornutae; folia elliptica, acuminata, denticulata, brevipetiolata; flores in axillis foliorum summorum, 7.5-8 cm longi, pedicellis 5-5.5 cm longis; calycis labium dorsale 5-7.5 mm longum, apicibus liberis 1-2 mm longis; corollae tubus 45-48 mm longus, rectus, basi constrictus; lobi falcato-deflexi; filamenta 60-70 mm longa, pubescentia. Fig. 1,B.

A scaberulent vine, climbing 2-6 m, the herbage soon glabrate, when young glutinous-pubescent with rusty-brown rigid sparingly branched hairs up to 0.5 mm long; leaves elliptic, 2-3 (-5) cm wide, 6-10 cm long, about 3 times as long as wide, slenderly acuminate, acute or somewhat rounded at base, callose-denticulate with purplish teeth; petioles 1-1.5 cm long; flowers 7.5-8 cm long, in the axils of the somewhat reduced upper leaves; pedicels 5-5.5 cm long, bibracteolate, the bracteoles 2 mm long or less, 5-12 mm above the base of the pedicel; corolla scabrous without, about 5 cm long, "scarlet" (*Wurdack*, no. 916), or "salmon, the lobes yellow" (no. 928); tube 45-48 mm long, narrowly funnellform, the narrow basal portion about 2 mm wide, the mouth 7-10 mm wide when pressed flat; lobes decurved-falcate, standing nearly at right-angles to the tube, the dorsal pair 20 mm long, 5 mm wide at base, the others about 10-12 mm long; filament-tube 60-70 mm long,

pale-pubescent; anther-tube "purple," 8 mm long, 3 mm in diam, sparingly stiff-pilose distally, the two shorter anthers cornute, the appendage of white conerescent hairs 4 mm long; hypanthium urceolate, rounded at base, 8-10 mm high, 5 mm in diam, prolonged 2-3 mm beyond the summit of the ovary; calyx 2-parted, the 3 dorsal lobes united into a broadly triangular, sparingly denticulate lip 5-7.5 mm

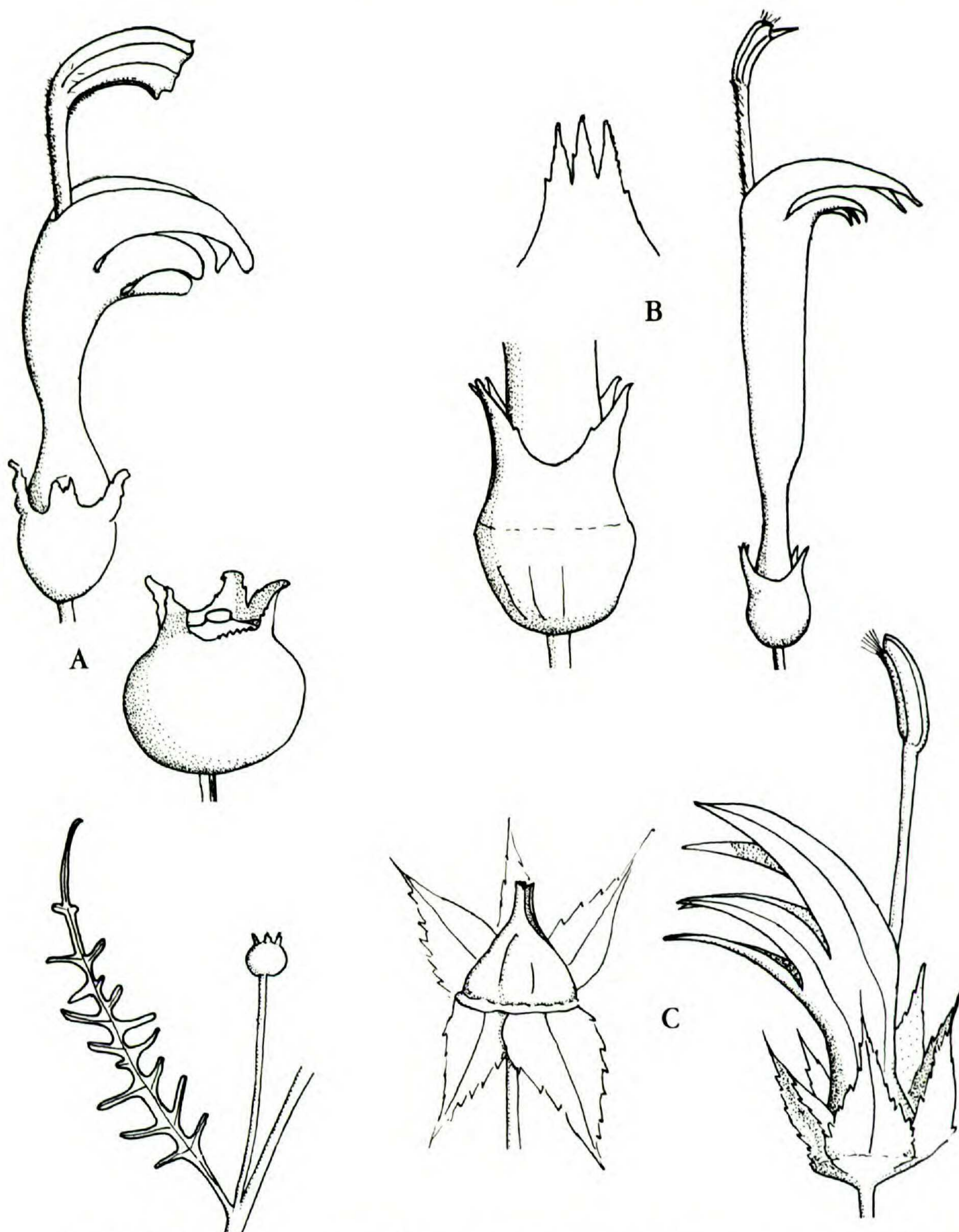


Fig. 1: A. *Burmeistera pteridioides* (holotype); flower, 2.5 \times ; immature fruit, 2.5 \times ; leaf and axillary pedicel, 0.5 \times . B. *Centropogon varicus* (holotype); dorsal lip of calyx, 2.5 \times ; flowering calyx and hypanthium, 2.5 \times ; flower, 1 \times . C. *Siphocampylus exuberans* (holotype); fruit showing apical dehiscence, 1 \times ; flower, 1 \times .

long, 6-8 mm wide at base, the tips of the lobes free 1-2 (-3) mm; ventral lobes united into an opposing, similar but slightly smaller lip; mature fruit not seen, probably ellipsoid, ca 10 mm long, 6-8 mm wide; seeds ellipsoid, 0.7 mm long.

PERU: AMAZONAS: Prov Bongará, hills WNW (310°-320°) of Pomacocha, elev 2300-2700 m, frequent at moist forest edges, 19 June 1962, J. J. Wurdack 916 (MICH, holotype); same locality and date, Wurdack 928 (MICH).

Students of the *Lobelioideae* have often noted that a long straight corolla with decurved-falcate lobes may be found in species of several different sections of *Centropogon*; that is, the form of the corolla is not in itself diagnostic. It has always been assumed, however, that the rather large group of species with cornute anthers (i.e. Sect. *Centropogon*, by almost all authors called *Eucentropogon*) constituted a natural section, and that another large group with penicillate anthers and pubescence of branched hairs (i.e., Sect. *Siphocampyloides*, subsect. *Brevilimbati*; see Brittonia 6: 459. 1948), was equally natural and homogeneous. Now in *Centropogon varicus* [*varicus*, straddling] is described for the first time a species combining the cornute anthers (and the basally connate calyx-lobes of some species) of Sect. *Centropogon* with the arbusculiform hairs of Subsect. *Brevilimbati*. This combination of characters, and the bilabiate calyx (itself unique as far as I know) make *C. varicus* one of the most distinctive species in the genus.

Siphocampylus exuberans McVaugh, sp. nov., glabra, folis ovatis, cordatis, acuminatis, fimbriatulato-dentatis; flores solitarii in axillis foliorum superiorum, pedicellis flexuosis bibracteolatis 6-8 cm longis; corolla 4.5 cm longa, eius tubo 2-2.3 cm longo, limbo breviori; lobi corollae gradatim profundius soluti; filamenta 40-50 mm longa, antherae 10-13 mm longae; hypanthium breve, ovarium fere superum, calycis lobi foliacei, patentes, 1.5-2 cm longi, 1 cm lati, prominenter fimbriato-dentati. Fig. 1,C.

Glabrous "climber" to 4.5 m long; leaves ovate, scabrous above, cordate, slenderly acuminate, fimbriatulate-dentate with pale slender callose teeth 1 mm long; blades 2.5-4.5 cm wide, 6-9 cm long, on flexuous petioles 1.5-2.5 cm long; acumen 1.5-3 cm long; flowers 5-6 cm long, in the axils of the principal leaves, on stout flexuous bibracteolate pedicels 6-8 cm long (in fruit); corolla 4.5 cm long, "dull yellow with purple veins & patches, lobes pinkish" (according to the collectors); tube 2-2.3 cm long, narrowed from both ends to the middle, where 6-8 mm wide when pressed flat; lobes all somewhat recurved-falcate, the dorsal pair 25 mm long, 7-7.5 mm wide at base, the lateral and ventral lobes similar but successively shorter; filament-tube 40-50 mm long; anther-tube 10-13 mm long, 3 mm in diameter, gray, glabrous, but the two short anthers copiously white-tufted at apex; hypanthium shallow, nearly flat in anthesis, the ovary essentially superior; calyx-lobes foliaceous, similar in shape to the leaves and similarly dentate, 1.5-2.5 cm long, 1 cm wide including the teeth, in flower stellately spreading, in fruit more or less reflexed; capsule superior, conic, about 1.5 cm wide at base, 1.2 cm high, beaked 4 mm by the persistent style-base; seeds oblong, compressed, pale-tipped, 1.3-1.5 mm long.

ECUADOR: NAPO-PASTAZA: Oriente trail ENE of Cayambe Mountain, in dwarf forest, elev 3000 m ["10,000 ft."], "10.12" 1961, P.C.D. Cazalet & T. D. Pennington 5563 (MICH, holotype; K, US, isotypes).

Because of its large yellowish corolla with relatively long lobes and short tube, and because of its long filaments, this species would ordinarily be referred to the subsection *Megastomi* (cf. Pflanzenreich **IV**. 276b, part 2 [Heft 107]: 266. 1953). On the basis of plant-habit and flower-morphology in general, however, I believe it finds its closest affinity with a small group of species called by Wimmer the *Elegantes* (Pflanzenreich, p. 304). The latter are characterized by their flat or flattish hypanthium and essentially superior ovary and by their often foliaceous, toothed and spreading or reflexed calyx-lobes. In most of the *Elegantes*, however, the calyx-lobes are narrower than those of *S. exuberans*, the corolla-tube is narrower and straighter, and the leaves are less prominently toothed and seldom cordate.

Lobelia heteroclita McVaugh, sp. nov., herbacea, stricta, supra hispidula, foliis ellipticis, crenato-dentatis, subsessilibus; racemis longis, 100-150-floris, floribus tenuiter pedicellatis, floratione invertis, 4.5 cm longis; corollis puniceis fenestratis, unilabiatis; hypanthio gibbo, calycis lobis duobus ventralibus oblique divergentibus; filamentis 35-38 mm longis, basi inter se liberis 10-12 mm, dorsalibus 3 glabris, ventralibus 2 pubescentibus, in calcar productis. Fig. 2,A.

Herb 1.5 m high, probably simple and strict, the stem more than 1 cm in diam at base; upper stem, pedicels and hypanthia hispidulous; leaves [those of the basal half of the stem not seen] elliptic, or the lower [probably] oblanceolate, 2-4.5 cm wide, 7-10 cm long, 2-3 times as long as wide, crenate-dentate, acute or obscurely acuminate, rounded or abruptly contracted to a nearly sessile base, glabrous and lustrous above, glabrous beneath except for scattered colorless hollow flaccid hairs 1-1.5 mm long; inflorescence a leafy-bracted spikelike raceme 30-60 cm long, the lower bracts leafy, the upper ones gradually reduced in size; flowers 100-150, on short-hirsutulous ascending slender pedicels 1.5-2 cm long, these bibracteolate near base; flowers inverted in anthesis, 4.5 cm long; corolla "deep pink" (according to Grubb *et al.*), slender, 6-7 mm wide at base when pressed flat; tube 36-38 mm long, cleft dorsally to the base, fenestrate 10-12 mm at base, straight, gradually tapering from base to near apex (to about 2.5-3 mm wide), then curved abruptly toward the ventral side and contracted to the base of the lobes, where 2 mm wide or less; limb scarcely bilabiate, the lobes long and narrow, the dorsal ones 9-12 mm long, 1.5 mm wide, slightly longer than the 3 ventral, all declined in a group at an angle of about 45° with the narrow portion of the tube; filament tube 35-38 mm long, glabrous, the filaments distinct at base for 10-12 mm, the 3 dorsal ones glabrous, the two ventral ones pubescent like the ovary, extending into the gibbous prolongation of the calyx; anthers 4.5 mm long, slate-gray, the two ventral ones white-tufted at apex; hypanthium shallow, obliquely gibbous ventrally, the two ventral calyx-lobes somewhat directed outward; lobes triangular, 8-9 mm long, 2 mm wide at base, slender-pointed, entire or obscurely denticulate; ovary bilocular; seeds numerous on two axile placentae, not seen mature.

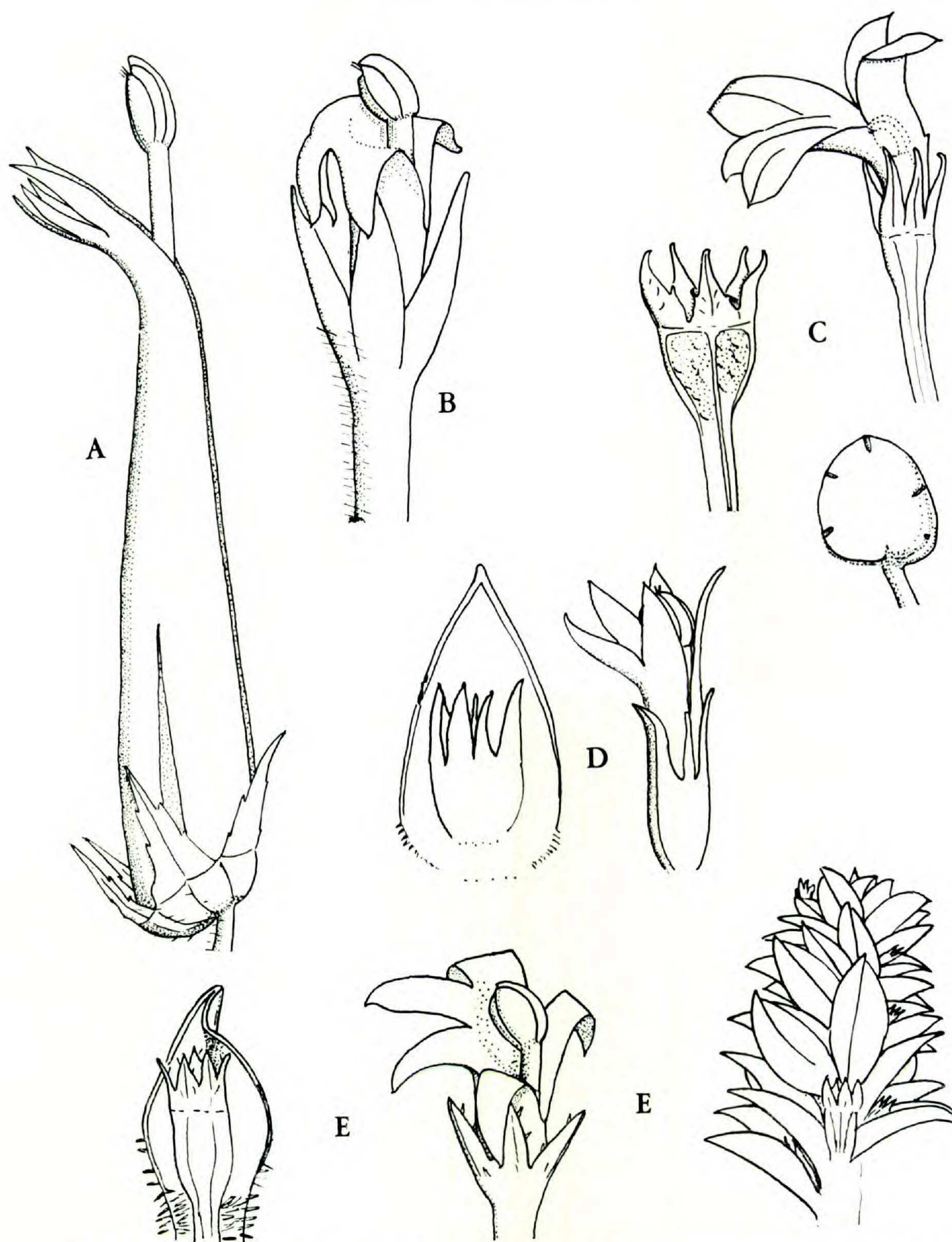


Fig. 2: A. *Lobelia heteroclita* (holotype); flower, 2.5 \times . B. *Lysipomia muscoides* subsp. *delicatula* (holotype); flower, 12.5 \times . C. *Lysipomia subpeltata* (holotype); flower, 5 \times ; mature fruit, 5 \times ; leaf, 5 \times . D. *Lysipomia hutchisonii* (holotype); detached leaf with sessile axillary fruit adherent at base to the adaxial surface, 5 \times ; flower, dorso-lateral view, showing the small dorsal calyx-lobe, 5 \times . E. *Lysipomia wurdackii* (holotype); detached leaf with axillary fruit adherent at base to the adaxial surface, 5 \times ; flower, 10 \times ; leafy branchlet, 2.5 \times .

COLOMBIA: BOYACA: Sierra Nevada de Cocuy, Laguna Seca, in more or less cleared area of cloud forest, elev ca 2750 m, 18 Aug 1957, P. J. Grubb *et al.* 599 (US, holotype; K, isotype).

This extraordinary plant is apparently referable to the subgenus *Tupa* as delimited by Wimmer (Pflanzenreich **IV**. 276b, part 2 [Heft 107]: 409. 1953). The corolla is unilabiate (as understood by Wimmer), all the lobes essentially alike and declined in a single group. The American species of *Tupa*, however, are all either West Indian, Chilean, or natives of southern Brazil and the Argentine. No species has been known hitherto from the northern Andes. In *Lobelia heteroclita* the habit, the form of the inflorescence, and the form of the corolla suggest some of the Chilean and Brazilian species. As far as I know, however, *L. heteroclita* is unique among its supposed relatives in its gibbous hypanthium and the concomitant changes in the calyx and stamens. The development of a spur or gibbosity on the ventral side of the calyx and hypanthium has apparently taken place several times in the *Lobelia*-complex, as e.g. among the species of subgenus *Mezleria*, of the Southern Hemisphere (cf. Pflanzenreich **IV**. 276b, part 2: 600. 1953), and among the North American species referred to *Heterotoma* (cf. N. Amer. Flora **32A**: 31. 1943). The latter is surely a genus of convenience, as shown by the inclusion in it of such diverse species as *H. lobelioides* Zucc., with red and yellow flowers suggesting those of *Lobelia laxiflora* H.B.K., and on the other hand species with small blue flowers suggesting those of many Mexican species of *Lobelia*, sect. *Hemipogon*. I do not believe taxonomy would be well served by the addition to *Heterotoma* of a new element, a species apparently derived from yet another assemblage in the vast complex of *Lobelia*.

Lysipomia muscoides Hook. f. subsp. **delicatula** McVaugh, subsp. nov. A subsp. *muscoidei* floribus majoribus, foliis angustioribus; a subsp. *simulante* calycis lobis foliisque angustioribus, pubescentia densiori, differt. Fig. 2,B.

Tufted mosslike perennials, the leaves numerous and crowded in rosettes on a multicapital caudex; leaves narrowly linear-acicular, 5-6 mm long, about 0.4 mm wide at base, tapering to the blunt, gland-tipped apex, the distal half strongly out-curved or even recurved in the older leaves; blades entire, concave on the adaxial surface, convex on the abaxial, glabrous distally, copiously and coarsely ciliate from the middle or a little above this to the base, especially on the margins and the abaxial surface; flowers sessile or essentially so in anthesis and in fruit, 5 mm long including the thick stipelike base of the ovary; corolla white (*Wurdack*), scarcely bilabiate, the lobes flaring, triangular, about 1.5 mm long, 0.7 mm wide, ovate, acute; tube 2 mm long (1 mm long to the dorsal sinus); filaments 2 mm long; anther tube plump, purple-brown (*Wurdack*), 1.3 mm long, the shorter anthers cornute with 2 minute hyaline processes; hypanthium densely and coarsely ciliate with hairs like those of the leaf-bases, the calyx-lobes glabrous unless at the very base; fruiting hypanthium linear or somewhat expanded distally, 2-2.5 mm long, 10-ribbed, unilocular, the tube prolonged 0.7-0.8 mm beyond the summit of the ovary, the ovules on one linear longitudinal parietal (ventral) placenta; calyx-lobes narrowly triangular, entire, 1.5 mm long, more or less equal in size and shape, the

dorsal one usually a little larger, 2 mm long; seeds 10-15 or fewer, plumply ellipsoid, 0.6-0.7 mm long, finely and irregularly wrinkled.

PERU: AMAZONAS: Prov Chachapoyas, middle eastern Calla-Calla slopes, nr kms 416-419 of Leimebamba-Balsas road, elev 2900-3100 m, 9 July 1962, occasional on steep banks, J. J. Wurdack 1286 (MICH, type); same locality, kms 409-410, elev 3100 m, 14 Oct 1964, Hutchison & Wright 6940A (UC).

In habit this plant is very like *Lysipomia muscoides* subsp. *muscoides*, of central Colombia, and subsp. *simulans*, of northern Colombia. From both of these it differs conspicuously in having narrow tapering leaves and a relatively luxuriant covering of stiff hyaline hairs on the leaf-bases and the hypanthia. Vegetative differences of a like order of magnitude are known among the local populations of other Andean species of *Lysipomia* (e.g. *L. spagnophila* Griseb., *L. laciniata* A. DC.); this suggests that the plant described here represents not a new species but another example of a localized race of a wide-ranging species.

Lysipomia subpeltata McVaugh, sp. nov., glabra, scaposa, foliis radicalibus, aggregatis, petiolatis, late ovatis, subpeltatis, 1-3 mm longis; scapis 2-4.5 cm longis; corollis 6-7 mm longis, roseis, labio inferiore basi croceo, purpureo-maculato; filamentis 2 mm longis. Fig. 2,C.

Glabrous scapose herb from an upright rootstock 4 mm long or less, bearing among the leaf-bases relatively thick adventitious roots 1-1.5 cm long, 0.7 mm thick; leaves 10 or more, on delicate slender petioles 2-3 mm long, "purplish, apparently peltate, hugging the ground" (Hutchison); blades up to 3 mm long and almost as wide, broadly ovate-cordate, standing at right-angles to the petiole which is inserted immediately distad of the basal sinus; margins seeming entire, but bearing 1-3 short peglike callose teeth on each side, the teeth abruptly infolded and appressed to the ventral surface of the blade; scapes (pedicels) 2-4.5 cm long, 0.5 mm in diam. ebracteate, prominently 5-angled below the flower; flowers 6 mm long (from the base of the hypanthium to the tips of the dorsal lobes of the corolla), the corolla "pale pink" (Wurdack), or "white with pink to lavender tints, lavender on outside" (Hutchison), the base of the lower lip yellow within and spotted dark purplish red; tube about 2 mm long to both lateral and dorsal sinuses, the latter bearing a small tooth; dorsal lobes outcurved, about 3.5 mm long, 1.3 mm wide; lower lip of corolla 4.5-5 mm long, the lobes 3.5 mm long, 1.8 mm wide; filament tube 2 mm long; anther tube plump, incurved, 1 mm long, the short anthers minutely appendaged; hypanthium campanulate, tapering into the pedicel, about 2 mm long in fruit; calyx lobes scarcely united at base, triangular, acute, about 2 mm long, 1 mm wide at base, the dorsal one slightly the longest, each lobe usually with 1 callose tooth on each side near base; ovary imperfectly bilocular; ovules probably about 50, on the two sides of the placenta which divides the basal part of the ovary; seeds ovoid, 0.7 mm long, minutely tuberculate in longitudinal lines.

PERU: AMAZONAS: Prov Chachapoyas, Cerros Calla Calla 19 km above Leimebamba, road to Balsas, on loamy slopes slightly raised above a bog, elev 3100 m, 14 Oct 1964, P. C. Hutchison & J. K. Wright 6951 (MICH, holotype); same locality, but nr kms 411-416 of Leimebamba-Balsas road, 3100-3250 m, locally frequent on moist sandy bank, 11 July 1962, J. J. Wurdack-1330 (MICH).

Few species of *Lysipomia* have the scapose habit and long-pedicellate flowers of *L. subpeltata*, and of these none has the broad subpeltate leaves nor the uniquely infolded marginal teeth. Presumably the nearest relative of *L. subpeltata* is *L. gracilis* (Wimmer) Wimmer, a poorly known species also from northern Peru. In *L. gracilis* the flower is about twice as large as that of *L. subpeltata*, and the leaves are narrow, crenate, and dilated at base.

Lysipomia hutchisonii McVaugh, sp. nov. Plantula caulescens caespitosa, consistens e ramulis carnosulis globularibus vel paullo elongatis, foliis multifariis rigidis carnosiusculis subtriangularibus acutis dense rosulatis; flores sessiles glabri; calycis lobi inaequales, lateralibus majoribus; filamenta 3.5 mm longa; corolla 6 mm longa; a *L. globulari* foliis subtriangularibus, calycibus glabris, differt. Fig. 2,D.

Caespitose, essentially glabrous, forming little mounds up to 10 cm or more across, with up to 25-30 short fleshy branches 1-3 cm long and 1-2 cm thick including the many-ranked leaves; roots adventitious, 1 mm thick or less, in a basal tuft; leaves about 15- to 20-ranked, closely imbricated, fleshy, rigid, ascending-spreading, about 100-200 clothing the tip of each branch in addition to the persistent dried ones below; blades sessile, entire, ovate-triangular, acute and short-cuspidate, 5-7 mm long, 3-4.5 mm wide at the widest part just above the base, glabrous except the minutely ciliate base; margins with narrow vitreous rim distally, the surfaces also glassy-lustrous; flowers sessile; corolla about 6 mm long, white (according to Hutchison), the slightly funnellform tube 3 mm long (about 1.3 mm long to the dorsal sinus); limb scarcely bilabiate, the lobes all a little outcurved, the dorsal ones slightly longer and narrower than the others, about 2.5 mm long and 1 mm wide; filament tube 3.5 mm long, adnate to the base of the corolla about 0.5 mm; anther-tube plump, about 1.5 mm long, apparently purplish-black, a little incurved, the two shorter anthers cornute with hyaline processes 0.3 mm long; hypanthium tangentially compressed, acute on the lateral margins, 2 mm wide in flower, after drying 2.5 mm wide in fruit, 2 mm long; calyx-tube prolonged 0.5 mm or less beyond the rim of the hypanthium; calyx-lobes narrowly triangular, entire (or often with a single glandlike tooth on one or both sides at the extreme base), acute or somewhat attenuate, 2-3 mm long, up to more than 1 mm wide at base; dorsal lobe usually, and one ventral lobe often, much smaller than the lateral ones, 0.2-0.5 mm wide, 1-1.5 mm long; operculum campanulate or slightly elongate, about 1.5 mm high; ovary unilocular, with about 20 ovules on one parietal placenta; seeds about 10, chestnut brown, ovoid, 0.7-0.9 mm long, minutely longitudinally striate.

PERU: AMAZONAS: Prov Chachapoyas, Cerros Calla Calla, 19 km above Leimebamba, road to Balsas, km 409-410, elev 3100 m, 14 Oct 1964, *Paul C. Hutchison & J. Kenneth Wright* 6940 (MICH, type; UC, isotype); same locality, but 18 km above Leimebamba, steep places in sandy soil, very local, elev 3100 m, 8 June 1964, *Hutchison & Wright* 5604 (MICH).

This species is very like *Lysipomia globularis* Wimmer, *Field Mus. Publ. Bot.* **13**(6): 485. 1937, but in the latter the leaves are linear or nearly so, and hardly more than 1.5 mm wide at base; the calyx-lobes are all fimbriate-ciliate except at the very tips, and the dorsal lobe (1.7-2.2 mm long) is longer than the others. The

two known collections of *L. globularis* came from Cutervo, Departamento de Cajamarca, Peru, a locality not far from that of *L. hutchisonii* but effectively separated from it by the valley of the Río Marañón.

Lysipomia wurdackii McVaugh, sp. nov., perennis, subglaber, caulescens, foliis conduplicatis pro genere latissimis 3-5 mm latis, floribus subsessilibus, filamentis 1.5 mm longis. Fig. 2,E.

Perennial, glabrous except the calyx-lobes and leaf-bases, with thick, apparently procumbent, sparingly branched stems 2-4 mm thick, up to 15 cm long, the basal portions bearing the remains of old leaf-bases, the tips 1-1.5 cm in diam including the closely imbricated many-ranked spreading conduplicate leaves; leaves spatulate, obovate or elliptic, concealing the upper stem, ciliate at base with stiff hyaline hairs up to 0.3 mm long, and sparingly beset with similar hairs on the adaxial surface at base; blades 6-8 mm long, 3-5 mm wide, keeled, obtuse, or the glandular apex forming an acute point; base broad, sessile; distal half of the blade with thick glassy margins, the surfaces also glassy-lustrous; flowers nearly sessile, somewhat enfolded by the subtending leaves, about 5 mm long including a stout pedicel-like base adherent to the leaf-base; corolla white (Wurdack), about 3.5 mm long, scarcely bilabiate, the lobes flaring, ovate, acute, nearly equal in size and shape, the two dorsal ones a little the longest, 1.7 mm long, 0.8 mm wide at base; tube about 2 mm long (1 mm long to the dorsal sinus); filament tube 1.5 mm long; anther-tube plump, 1 mm long, incurved, the two shorter anthers unappendaged; hypanthium somewhat tangentially flattened, in fruit 2 mm long, its tube prolonged about 0.5 mm beyond the summit of the ovary; calyx-lobes triangular, sparingly ciliate, nearly equal, 1.1-1.3 mm long, the dorsal one a little the longest; ovary unilocular; ovules and seeds about 20, on one longitudinal parietal (ventral) placenta; mature seeds irregularly ovoid, 0.6-0.9 mm long, tuberculate in longitudinal lines.

PERU: AMAZONAS: Prov Chachapoyas, summit of Cerro Malcabal (Cerro Tumbé), 3-6 km S.W. of Molinopampa, elev 2850-2900 m, 20 July 1962, occasional, *J. J. Wurdack 1416* (MICH, holotype).

The combination of long, stout branches, broad imbricate conduplicate leaves, and small sessile flowers, effectively distinguishes this newly described species from all others in the genus.